device manipulates a portion of the one or more user-input elements to an extended orientation and the other to a retracted orientation consistent with the configuration settings. The one or more user-input elements provide a tactile feedback, in the extended orientation, when actuated by a user. In embodiments, tactile feedback is generated by a spring-loaded mechanism employed by the one or more user-input elements that imitate a click generated upon pressing a key on a normal electromechanical keyboard. In one instance, the one or more user-input elements are embodied as a set of movable pins that function as touch-sensitive keys, where the set of movable pins are disposed in a substantial perpendicular-spaced relation to the flexible touchpad. The flexible touchpad renders a user-interface (UI) display that is controlled, in part, by the presentation data, and for expressing outwardly-extending protrusions generated by the manipulation of the one or more user-input elements. Generally, the flexible touchpad is a self-illuminating film (e.g., organic light-emitting diode) that projects the UI display without the assistance of backlighting and that substantially overlays the one or more user-input elements. In operation, the flexible touchpad may express the outwardly-extending protrusions as a replication of a physically-extending keypad, and displays at least one character in association with each of the outwardly-extending protrusions in accordance with the configuration settings.

**[0010]** In a further aspect, embodiments of the invention are directed toward a computerized method for manipulating user-input elements to manage outwardly-extending protrusions expressed at a flexible touchpad incorporated in a touchscreen device. Initially, the method includes receiving a request to manipulate the expression of the outwardly-extending protrusions. The request is processed by executing a manipulation procedure for controlling a portion of the user-input elements. In one instance, the manipulation procedure includes, but is not limited to, the following: accessing configuration settings based on processing the one or more requests; and manipulating the portion of the user-input elements in accordance with the configuration settings, thereby affecting the outwardly-extending protrusions. In another instance, the manipulation procedure further includes identifying the configuration settings as indicating an adjustment of the portion of the user-input elements to a text-entry mode and manipulating the portion of the user-input elements such that the outwardly-extending protrusions replicate a physically-extending keypad. A user-interface (UI) display is rendered at the flexible touchpad according to the request. In an exemplary embodiment, rendering includes extracting presentation data from the request, communicating the presentation data to the flexible touchpad, and rendering the UI display at the flexible touchpad to present one or more characters in association with each of the outwardly-extending protrusions. Typically, the one or more characters visually indicate which of the user-input elements are in an active condition. Alternatively, absence of an associated character, and/or positioned in a retracted orientation, indicates which of the outwardly-extending protrusions reside in an idle condition.

## BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

**[0011]** Illustrative embodiments of the present invention are described in detail below with reference to the attached drawing figures, which are incorporated by reference herein and wherein:

**[0012]** FIG. **1** is an exemplary set of user-input elements accommodated on a touchscreen device with a portion of the user-input elements adjusted to an extended orientation, in accordance with an embodiment of the present invention;

**[0013]** FIG. **2** is a schematic diagram depicting the components of an exemplary touchscreen device for use in implementing embodiments of the present invention;

**[0014]** FIG. **3** is a flow diagram showing an overall method for manipulating user-input elements to manage outwardly-extending protrusions expressed at a flexible touchpad incorporated in the touchscreen device, in accordance with an embodiment of the present invention;

**[0015]** FIG. **4** is a flow diagram showing a method manipulating a set of moveable pins to produce a physically-extending keypad, in accordance with an embodiment of the present invention;

**[0016]** FIG. **5** is an exemplary physically-extending keypad accommodated on a touchscreen device with an appearance that replicates an actual keyboard, in accordance with an embodiment of the present invention;

**[0017]** FIG. **6** is an exemplary physically-extending keypad accommodated on a touchscreen device with an appearance that replicates an actual dial pad, in accordance with an embodiment of the present invention;

**[0018]** FIG. **7** is an exemplary physically-extending keypad accommodated on a touchscreen device configured in a text-entry mode and demonstrating a feature for providing content output via outwardly-extending protrusions expressed at a flexible touchpad, in accordance with an embodiment of the present invention;

**[0019]** FIG. **8** is an exemplary configuration of outwardly-extending protrusions guided by operations of an application running on the touchscreen device, in accordance with an embodiment of the present invention; and

**[0020]** FIG. **9** is an exemplary configuration of outwardly-extending protrusions similar to the outwardly-extending protrusions of FIG. **8**, but also incorporating user-initiated inputs when manipulating the user-input elements, in accordance with an embodiment of the present invention.

## DETAILED DESCRIPTION

**[0021]** Embodiments provide systems and methods for manipulating user-input elements according to a request provided to a touchscreen device from a user or a presently-running application thereon. Generally, manipulation includes identifying a predefined configuration associated with the request, deriving configuration settings from the predefined configuration to be transmitted to an electromechanical device for adjusting a portion of the user-input elements to an extended orientation, and activating user-input elements based on the request. In an exemplary embodiment, the portion of the user-input elements positioned in the extended orientation are placed in an active condition, according to the request, while a remainder of the user-input elements are placed in the idle condition. Further, the extended orientation produces outwardly-extending protrusions on a flexible touchpad incorporated in the touchscreen device. Typically, these outwardly-extending protrusions replicate keys of a standard keyboard and correspond with expected inputs of the presently-running application implemented on the touchscreen device. Accordingly, an intuitive layout of the user-input elements in the active condition is provided that facilitates ease of control over a broad range of various applications. Additionally, the user is alerted to which